Claims

1. Apparatus for supplying energy to a load, comprising: a power supply unit having an input for receiving current at mains frequency, means for increasing said frequency to a higher frequency, an output for delivering energy at the higher frequency; and a two part induction connector having a first core portion that has a primary winding connection connected to the output of the power supply unit and a second core portion that has a secondary winding connection for delivering energy to a load, the core portions being of a high resistivity material.

2. Apparatus according to claim 1 wherein the first and second core portions of the induction connector are adapted to mate and be disengaged one from another.

3. Apparatus according to claim 1 or 2, wherein the means for increasing said frequency to a higher frequency is arranged to step-up said mains frequency to a frequency of 23 kHz-10 MHz.

4. Apparatus according to claim 1 or 2, wherein the means for increasing said frequency to a higher frequency is arranged to step-up said mains frequency to a frequency of 25-60 kHz.

5. Apparatus according to claim 1 or 2, wherein the means for increasing said frequency to a higher frequency is arranged to step-up said mains frequency to a frequency of 30-50 kHz.

6. Apparatus according to any preceding claim, wherein the means for increasing said frequency to a higher frequency includes an electronic transformer and a means for delivering a modulated DC supply.

7. Apparatus according to claim 6, wherein the means for increasing said frequency to a higher frequency includes an electronic transformer for delivering a modulated DC supply at a predetermined voltage.

8. Apparatus according to either claim 6 or 7, wherein over-current and/or load short-circuit protection is provided.

9. Apparatus according to any of claims 6, 7 or 8, wherein the means for increasing said frequency to a higher frequency includes a switched mode power supply or quasi mode power convertor.

10. Apparatus according to any of claims 1 to 5, wherein the means for increasing said frequency to a higher frequency is an electronic ballast.

11. Apparatus according to any preceding claim, wherein the first and second core portions of the induction connector are of a material having a bulk resistivity of at least 10^3 Ωcm.

12. Apparatus according to claim 11, wherein the first and second core portions of the induction connector are of a material having a bulk resistivity of at least 10^4 Ωcm.

13. Apparatus according to any preceding claim, wherein the first and second core portions are of a nickel-zinc ferrite.

14. Apparatus according to any preceding claim, wherein the first and second portions of the two-part induction connector comprise: pins and sockets that removably push together for mating together the first and second portions of the connector.

15. Apparatus according to any of claims 1 to13, wherein the portions of the two-part induction connector comprise: clips and recesses that removably snap together for mating the parts of the connector.

16. Apparatus according to any of claims 1 to 13, wherein the portions of the two-part induction connector comprise bayonet formations and recesses that removably twist together for mating the parts of the connector.

17. Apparatus according to any of claims 1 to 16, wherein the load comprises one or more of the following group comprising: mains incandescent lamps, low-voltage incandescent lamps, light-emitting diodes and fluorescent lamps.

18. Apparatus according to claim 17, wherein the load comprises a plurality of lamps in parallel.

19. Apparatus according to any of claim 17, wherein the load comprises a plurality of lamps in series.

20. Apparatus according to any claim 17, wherein the load comprises a plurality of lamps on a wire or track.

21. Apparatus according to any of claims 1-16, wherein the load comprises an electric motor, a power supply for a computer, radio, television or like electronic device, a heater or the like.

22. A two-part induction connector, or a primary or secondary portion thereof, for use in the apparatus of any preceding claim.

23. A two-part induction connector according to claim 22 having a primary connection with a multi faceted primary induction connector adapted to couple energy to one or more secondary connectors.

24. A two-part induction connector according to claim 22 wherein the secondary connection has a multi faceted secondary induction connector adapted to couple energy from one or more primary connectors.

25. A two-part induction connector according to any of claims 22 to 24 adapted to receive a two-core cable, there being a primary core for providing a primary induction connection having a wire wound around the core, the wire being connected to the two-core cable by an insulation displacement connector device.

26. A two-part induction connector according to claim 25 has a third wire for providing an additional earth connection.

27. A two-part induction connector according to any of claims 22 to 31 capable of providing a voltage in dependence upon the number of windings on the secondary core.

28. A two-part induction connector according to any of claims 22 to 27 wherein the output voltage from the secondary coupler is either AC or DC.

29. A two-part induction connector according to any of claims 22 to 28 wherein the connectors can be rotated with respect one to another thereby varying the amount of energy coupled from the primary core portion to the secondary core portion.

30. A two-part induction connector according to claim 29, when dependent upon any of claims 17 to 20, wherein the core portions can be rotated with respect one to another thereby providing a dimmer switch.

31. A two-part induction connector according to claim 29, when dependent upon any of claims 17 to 20, wherein a switching or dimming effect is achieved by increasing the air gap between surfaces of primary core and secondary core portions.

32. A two-part induction connector according to any of claims 22 to 31 including a ferrite or similar low reluctance material.

33. A two-part induction connector according to any of claims 22 to 32 characterised in that the primary and secondary portions are formed in any shape from the group comprising: a toroid, rhomboid, cube, parallelepiped, hemisphere, frusto-conical or other circular symmetric solid.

34. A two-part induction connector according to any of claims 22 to 33 that is factory wound and supplied complete to meet specific loading requirements.

35. A two-part induction connector according to any of claims 22 to 33 wherein a user wound primary and/or secondary inductive connector has a preformed profile, such as a helical path, to ensure that a correct number of windings are applied.

36. A lamp having formed in its housing a secondary core of a two-part induction connector and being in electrical connection with a winding on said core in order to energise the lamp.

37. The lamp of claim 36 wherein the housing supports an incandescent lamp or a fluorescent tube, said housing having at a surface at least first and second pole pieces of said secondary core.

38. An appliance includes the load according to any of the claims 1 to 21 wherein the appliance is taken from the group of: computers, computer peripheral devices, telecommunications equipment including handheld devices, office equipment, medical

equipment, domestic electrical appliances such as dish washers, washing machines, micro-wave ovens (white goods), food mixers, radios, televisions, hi-fi equipment, audio equipment (brown goods), mining equipment, industrial equipment, aerospace equipment, marine and sub-marine equipment, automotive equipment, commercial and domestic furniture, school equipment, retail point of sale and advertising equipment, road signs, road markings, street furniture, petrochemical equipment, lighting: including commercial, industrial, retail, transport airfield and runway, road signs, road markings, electronic surveillance equipment, printed circuit boards, military equipment, transport equipment and security systems.

39. A plug includes a secondary core portion within a housing, the housing having fastening means for use with: the apparatus according to any of claims 1 to 21; or a connector according to any of claims 22 to 26; or a lamp according to either claims 27 or 28; or an appliance according to claim 38.

40. A plug according to claim 39, wherein said fastening means comprises bayonet formations, a screw formation, clips, catches or a slidable engagement mechanism.

41. A socket in electrical connection with a power supply has a primary core portion and is adapted to receive at least one plug according to either claim 39 or 40.

42. A system includes: a socket according to claim 41 and a plug according to either of claims 39 or 40 and the apparatus of the apparatus according to any of claims 1 to 21; or a connector according to any of claims 22 to 26; or a lamp according to either claims 27 or 28; or an appliance according to claim 38 or any other load.

43. The apparatus of any of any of claims 1 to 21 adapted for use with renewable electricity generators including: wind, solar, wave, and hydroelectric generators.